[COMMITTEE PRINT]

REPORT ON ENVIRONMENTAL RESEARCH, DEVELOPMENT, AND DEMONSTRATION ACTIVITIES AT THE ENVIRONMENTAL PROTECTION AGENCY

REPORT

TO THE

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY U.S. HOUSE OF REPRESENTATIVES

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LETTER OF TRANSMITTAL

U.S. HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY,
Washington, DC, December, 1990.

To All Members, Committee on Science, Space, and Technology:

There is transmitted herewith a report on the environmental research, development, and demonstration activities at the U.S. Environmental Protection Agency (EPA). The Committee oversees the research, development, and demonstration programs at EPA as a means of ensuring that these programs are well managed and supportive of the Agency's primary role of protecting public health and the environment.

I commend the report to your attention.

Sincerely,

ROBERT A. ROE, *Chairman.*

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COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

REPORT ON ENVIRONMENTAL RESEARCH, DEVELOPMENT, AND DEMONSTRATION ACTIVITIES AT THE ENVIRONMENTAL PROTECTION AGENCY

COMMITTEE PRINT

December 18, 1990

The Committee on Science, Space, and Technology oversees the research, development, and demonstration programs of the Environmental Protection Agency (EPA) as a means of ensuring that these programs are well managed and supportive of the Agency's primary role of protecting public health and the environment. In addition, the Committee authorizes appropriations for EPA's Office of Research and Development (ORD) to provide substantive program direction to ensure that the Agency has an adequate scientific basis for its regulatory programs. The most recent law passed by Congress authorizing appropriations for the EPA was passed in 1981 (Public Law 96-569). In the 100th Congress, the House passed H.R. 2325, a two-year EPA research authorization bill for fiscal years 1988 and 1989, but the Senate failed to act.

A. EPA'S RESEARCH PROGRAM

EPA's Office of Research and Development is responsible for EPA's in-house and extramural research programs. ORD accounts for about 18 percent of EPA's total operating budget (excluding Superfund and construction grants). Most of EPA's in-house research is carried out in its laboratories and field stations. However, about two-thirds of EPA's research is extramural. EPA carries out its extramural research program through grants, cooperative agreements, and contracts with universities, consultants, and contractors.

EPA's research program is intended to support the Agency's regulatory mission under various environmental statutes, including the Clean Air Act, the Federal Water Pollution

Control Act (commonly known as the Toxic Substances Control Act (TSCA), the Solid Waste Disposal Act (as amended by the Resource, Conservation, and Recovery Act, or RCRA), the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), the Safe Drinking Water Act (SDWA), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or "Superfund"), and the Superfund Amendments and Reauthorization Act (SARA).

EPA's research agenda is planned by five research committees, which include representatives from the program offices directly responsible for regulation. The planning process is intended to ensure that the research is responsive to the particular needs of the regulatory offices.

B. SUMMARY OF EPA'S BUDGET REQUEST

The Administration has requested a total of $449.6 million for the fiscal year 1991 research and development program, an increase of $27.7 million, or six percent, over current fiscal year 1990 levels.[1] An increase of $19.1 million (eight percent) was requested for the extramural program (excluding Superfund and the leaking underground storage tank program, LUST); for the intramural research program an increase of $13 million (11 percent) was requested. The budget request also envisions a slight increase in personnel, from 1880 to 1891 full-time personnel.

C. RECENT INCREASES IN R&D FUNDING

The fiscal year 1991 budget proposal continues a recent trend of modest funding increases for environmental research and development programs at the EPA. However, while the recent upward trend is encouraging, it does not bring EPA's budget to the levels (in real terms) it received a decade ago. From 1980 to 1990 the budget increased from $338.5 million to $424 million, a 25 percent increase in actual dollars. However, an adjustment of these values for inflation reveals a 16 percent decrease in funding over the last 10 years. Moreover, EPA has suffered a loss of 20 percent of its full-time personnel over the last decade, a decline of over 450

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[1] In its budget proposal to the Office of Management and Budget, EPA had requested a total of $515.5 million, $65.9 million more than was granted.

positions.

Thus, EPA has less purchasing power and less manpower than it did when the regulatory burden was not nearly as great as it is today. Moreover, EPA's current workforce is aging; almost half the scientific workforce will be eligible for retirement in the next five years.[2] The SAB has noted its serious concern that many EPA's ORD staff are weak in certain critical skill areas. For example, out of 1800 positions in an agency who responsibility it is to protect the environment, only 17 are ecologists. The SAB has urged that new talent be brought in to ORD and that increased training be given to present scientists. Much new legislation has been passed over the past several years: for example, TSCA, RCRA, CERCLA and SARA, and significant amendments to the SDWA and the Clean Water Act. Research funding for environmental issues of widespread public concern, such as hazardous waste cleanups and acid rain, have drawn additional resources at the expense of research on, for example, methods for assessing ecological health and multi-media research.

The chronic declines in funding during the 1980's adversely affected the Agency's ability to acquire new scientific equipment to replace aging and outmoded equipment at EPA's labs. Since Congress appropriates in-house and extramural funds in separate accounts, EPA has little flexibility in shifting resources between in-house and extramural accounts as do other agencies. From the in-house appropriations account, EPA must pay not only personnel benefits and compensation, but also all other expenses related to running EPA's in-house research, such as rent, computers, lab equipment, and other scientific research supplies. As a result of rising personnel costs, EPA has been forced to cut back on its purchases of modern lab equipment.

In fact, EPA's research facilities and equipment are aging significantly. According to a recent EPA report, some of the facilities are badly in need in maintenance and repair: one building even experienced a collapsing roof. EPA's facilities at Research Triangle Park, which carry out most of EPA's research under the Clean Air Act, are especially inadequate. Research scientists at EPA often complain of dilapidated equipment; although impossible to quantify, it is

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[2]U.S. EPA Science Advisory Board: "Report of the Research and Development Budget Review Subcommittee: Review of The Fiscal 1991 President's Budget for Research and Development." March, 1990. p. 7.

likely that the poor condition of the laboratories is discouraging environmental researchers from working for EPA. The SAB estimates that it will cost $26 million per year for the next five years to bring EPA's scientific equipment to conditions comparable to common industry standards.[3] With increased use and need for complex air pollution models, EPA also needs supercomputer capabilities -- the agency is presently conducting studies to on how to meet its supercomputer needs. Committee views on supercomputer procurement for EPA's facilities at Research Triangle Park are discussed in the section-by-section analysis of the bill.

The effects of declining investment in environmental research, while difficult to quantify, have led many observers to believe that overall research resources are insufficient to meet regulatory needs. Scientific uncertainty exists in many areas for which regulation is needed to protect environmental quality. As a result, the lack of solid scientific information has led to significant delays in decision-making and has forced policymakers to make judgments in the face of substantial scientific uncertainty. Examples of such delays include the failure to promulgate national and regional standards for many hazardous air pollutants, drinking water contaminants, releases of biotechnology products, and the lack of adequate technologies and strategies for reducing air pollutants which contribute to global environmental problems such as global warming and ozone depletion.

Moreover, scientific research designed to measure the effectiveness of existing and future enviromental control actions is lacking. For example, methods for measuring ecological health before and after environmental standards are implemented are virtually non-existent. The EPA concurs that the inadequacy of such research is a problem: "Environmental regulatory programs have been estimated to cost more than $70 billion annually, yet the means to assess their effect on the environment over the long term do not exist. While regulatory programs are based upon our best understanding of the environment at the time of their development, it is critical that long-term monitoring programs be in place to confirm the effectiveness of these programs in achieving their environmental goals and to corroborate the science upon which they are based."[4]

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[3]U.S. EPA Science Advisory Board. Supra.

[4]U.S. EPA. Environmental Monitoring and Assessment Program: Overview. January 1990.

D. SETTING RESEARCH PRIORITIES

Concerns have also been expressed over the past several years about EPA's process for setting research priorities. EPA's research priorities are dictated largely by the pressing regulatory needs of the program offices. The ORD has become a "technical support branch," in effect, for "client" program offices.

This arrangement has had several adverse effects. First, it has been difficult for ORD to carry out anything but short-term, applied research. Particularly in a time of shrinking total research resources, funds allocated to longer-term, more basic research have been frequently reprogrammed by the Office of Management and Budget or the Agency to meet immediate needs perceived to be more urgent. Secondly, rapidly shifting priorities have prevented ORD from planning orderly multi-year research programs.

As a result, the focus of ORD's research is often too narrow. For example, ORD presently conducts almost no basic environmental research which could further the understanding of fundamental environmental processes and health effects. By focusing solely on short-term, applied research, EPA cannot reduce the scientific uncertainties which plague rational, cost-effective environmental regulation. In addition, such narrowly focused research programs fail to identify and assess those environmental problems which pose the greatest risk to human health and the environment.

For example, major uncertainties remain about the fate and distribution of chemicals in the environment, and even less is known about the ecological effects of mixtures of pollutants and other environment-related stresses such as global warming. A lack of adequate information about the human health effects – particularly non-cancer effects – of a wide variety of pollutants – hinders the Agency's ability to assess risks, issue appropriate standards, and take enforcement action.

Similarly, by concentrating on research which meets pressing regulatory needs, ORD's research program fails to identify and assess new environmental problems which may in fact pose far greater threats to the environment or public health than problems which already have the Agency's attention. Examples of such relatively new and unforeseen environmental problems include radon and other indoor air pollutants in buildings, stratospheric ozone

depletion from the release of chlorofluorocarbons, and the environmental impacts of the release of the products of biotechnology.

Assessing and comparing environmental threats is fundamentally a scientific enterprise, and the responsibility ought to lie in ORD to conduct such research. It is clear, however, that ORD presently relies on the program offices to identify research needs, and does not engage in the type of analyses which could enable it to influence agency priorities and research needs. Instead of science determining which environmental issues should be addressed with regulations, existing regulations are determining which scientific research should be conducted.

Recognizing this problem, former EPA Administrator Lee Thomas appointed a special blue-ribbon Science Advisory Board panel in 1987, headed by former Deputy Administrator Al Alm, to make recommendations on a long-term research strategy for ORD. The report of the panel, Future Risk: Research Strategies for the 1990s (hereinafter referred to as the "Alm Commission Report") was released in September, 1988. Central to the Alm Commission Report's findings was the view that EPA's mission requires it to be more than just a regulatory agency, and that it needs to rely more heavily on non-regulatory approaches to risk reduction, such as technology development for pollution prevention.

In line with this finding, the Alm Commission Report found that EPA's research mission is a key component of a new, non-regulatory agenda. The report made 10 major recommendations for revamping EPA's research and development program:

1. EPA should shift the focus of its environmental protection strategy from end-of-pipe controls to preventing the generation of pollution.

2. To support this new strategy, EPA should plan, implement, and sustain a long-term research program.

3. EPA needs to establish better mechanisms to ensure that a coherent, balanced research and development strategy is planned and implemented.

4. EPA must improve its capability to anticipate environmental problems.

5. EPA should provide Federal leadership for a national program of ecological research by establishing and funding an Environmental Research Institute.

6. EPA should expand its efforts to understand how and to what extent humans are exposed to pollutants in the real world.

7. EPA should initiate a strong program of epidemiological research.

8. EPA should expand its efforts to assist all those parts of society that must act to prevent/reduce environmental risk.

9. EPA needs to increase the number and sharpen the skills of the scientists and engineers who conduct environmental research; and

10. EPA's research budget should be doubled over the next five years.

In response to the Alm Commission Report, EPA has prepared two documents of particular interest: "Protecting the Environment: A Research Strategy for the 1990s"[5] (hereinafter referred to as "Research Strategy"), and "Pollution Prevention Research Plan: Report to Congress"[6] (hereinafter referred to as "Pollution Prevention Report").

The Research Strategy proposed a new "core" research program to focus research in four areas identified by the Alm Commission Report: 1) ecological risk assessment; 2) risk reduction; 3) health risk assessment; and 4) exploratory grants and research centers. EPA envisions that a primary component of the ecological risk assessment efforts will be a new program called EMAP, or Ecological Monitoring Assessment Program, for monitoring ecological health. As part of its risk reduction effort, EPA has proposed a pollution prevention research program which, as amplified in the Pollution Prevention Report, addresses six major areas: 1) product research; 2) process research; 3) recycling and reuse research; 4) socioeconomic and institutional research; 5)

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[5]U.S. EPA. "Protecting the Environment: A Research Strategy for the 1990s" April 1989 draft.

[6]U.S. EPA. "Pollution Prevention Research Plan: Report to Congress" February 1990.

anticipatory research; and 6) technology transfer and technical assistance.

As discussed in detail below, the Committee endorses and supports many of EPA's plans for remedying them, by supporting increased funding for EPA's in-house research program in fiscal years 1991, 1992, and 1993, new requirements which are intended to strengthen the role of basic research through a core research program, and improvements in the Agency's capacity to identify and assess environmental research needs.

COMMITTEE ACTIONS

The Subcommittee on Natural Resources, Agriculture Research, and Environment [hereinafter referred to as the "Subcommittee"] held hearings on April 3, 1990 to consider a Committee Print of a draft bill prepared by the Subcommittee authorizing appropriations for EPA's research programs for fiscal years 1991, 1992, and 1993. The Subcommittee received testimony from Dr. Erich Bretthauer, Assistant Administrator, Office of Research and Development; Dr. John Neuhold, Chairman, Research and Development Budget Subcommittee, EPA Science Advisory Board; Dr. Joel Hirschhorn, Senior Associate and Project Director, Office of Technology Assessment; Dr. Michael Overcash, Director, EPA Center for Waste Minimization and Management; and Mr. Thomas W. Zosel, Environmental Engineering and Pollution Control Division, Minnesota Mining and Manufacturing Co.

The Committee Print was marked up by the Subcommittee on May 17, 1990 with one amendment (which authorizes a pollution prevention program) at which time the Subcommittee ordered reported a clean bill to the full Committee by a unanimous voice vote. The bill, H.R. 4873, was introduced on May 22, 1990 by Chairman Roe. H.R. 4873 was considered and ordered reported with amendments by the Committee on Science, Space, and Technology on May 23, 1990. There was no subsequent action on the bill in the 101st Congress.

The purposes of the bill (H.R. 4873) were:

(1) To authorize appropriations for environmental research, development, and demonstration activities of the Environmental Protection Agency (EPA) for fiscal years 1991, 1992, and 1993;

(2) To expand EPA's capability and emphasis in long-term environmental research;

(3) To provide program direction for EPA's research program;

(4) To enhance the role of the Science Advisory Board in reporting to Congress on EPA's research needs and programs.

A summary of the authorizations for appropriations in the bill follows:

EPA RESEARCH AND DEVELOPMENT AUTHORIZATION
FOR FISCAL YEARS 1991, 1992, AND 1993
(in thousands of dollars)

Research program (by medium)	Fiscal Year 1991	Fiscal Year 1992	Fiscal Year 1993
Air Quality	105.877	125,995	148,515
Water Quality	32,875	36,848	40,690
Drinking Water	24,069	25,791	27,323
Hazardous Waste	43,402	46,572	48,935
Pesticides	17,369	19,564	21,847
Radiation	5,152	7,358	7,653
Multimedia	119,503	149,893	191,390
Toxic Substances	30,964	34,012	36,873
Energy and Acid Rain	14,257	14,547	14,865
Management and Support	15,625	16,250	16,900
Total	409,094	476,830	554,991

SECTIONAL ANALYSIS OF THE BILL

SECTION 1. SHORT TITLE.

The short title of this Act is the "Environmental Research, Development, and

Demonstration Act of 1990."

SEC. 2. GENERAL AUTHORIZATIONS.

Section 2 of the bill provides for authorization of appropriations for research, development, and demonstration in the various program categories. Except where otherwise noted, these are the program categories used by the EPA in developing its budget request.

The following paragraphs describe each of the research programs and the corresponding Committee actions for fiscal years 1991, 1992, and 1993. The discussion of individual programs is organized by media, as identified in Table 1. A brief overview is provided for each of the media followed by discussion of Committee actions.

SECTION 2(a)(1). AIR QUALITY.

Description of program.

This research program provides the research and technical support necessary to enable the Agency to carry out its regulatory and information transfer responsibilities under the Clean Air Act. Scientific support is required for such activities as the development and review of National Ambient Air Quality Standards, New Source Performance Standards, State Implementation Plans, and regulations for hazardous air pollutants. ORD also supports programs at EPA including the mobile source regulatory program, the indoor air program, the stratospheric ozone depletion and global climate change program, and the National Health and Nutrition Examination Survey. The anticipated amendments to the Clean Air Act will require a significantly expanded research program.

Budget Request.

The fiscal year 1991 budget request for Air Quality research is $94,928,000, an increase of $17,119,000 (22 percent) over fiscal year 1990 levels. A total of 440 full-time employees (FTEs) was requested, a 4.8 percent increase over the fiscal year 1990 level.

In response to growing concern and the new responsibilities required by the Global Climate

Protection Act passed by the 100th Congress, EPA has requested $26 million and 43 workyears for global change research, an increase of $10.6 million and 12 workyears over fiscal year 1990 levels. EPA provided for an increase of $7 million over fiscal year 1990 funding for air research in anticipation of amendments to the Clean Air Act – EPA's requested funding level was based on the amendments submitted to Congress for its consideration by the President last year.

Committee Action.

The Committee increased the President's fiscal year 1991 request for Air Quality research by $10,949,000, or 11.5 percent, totaling $105,877,000. For fiscal years 1992 and 1993, the Committee provided $125,995,000 and $148,515,000, respectively.

The Committee believes that this increase in funding is necessary to carry out the provisions of the amendments to the Clean Air Act and research needs related to global change. The Committee prepared a set of amendments to the Clean Air Act designed to better focus and increase support for research activities at EPA to monitor, control, prevent, and better understand the effects of air pollution. The Committee's amendments were included as part of bill amending the Clean Air Act (H.R. 3030) which passed the House on May 23, 1990, and which were signed into law on November 14, 1990 (Public Law 101-549).

EPA's global change research program is part of a larger interagency research program, the U.S. Global Change Research Program, coordinated by the Committee on Earth and Environmental Sciences, which is part of the Federal Coordinating Council for Science, Engineering, and Technology in the President's Office of Science and Technology Policy. The Committee believes that EPA's global change research activities should focus primarily on research to better understand the regional effects of global climate change, including impacts on ecosystems important to the environmental quality of the global environment. In addition, EPA can and should play an important role in undertaking research to enhance the ability of the nation to offset greenhouse gas emissions and ozone-depleting compounds.

As mentioned previously in this report, the Committee is deeply concerned that EPA's in-house research equipment and facilities are outdated and largely inadequate to meet today's environmental research needs. Thus, the Committee strongly endorses the proposed consolidation of the EPA research facilities at Research Triangle Park (RTP), North Carolina, where research

to support the Clean Air Act and to study health effects of exposure to pollutants is conducted. EPA currently employs approximately 1200 persons in the Research Triangle Park area. These employees are spread among 12 buildings, including a large building that was converted from a federal prison. Such an arrangement hinders productivity, efficiency, and effective EPA research operations. At a time when the mission of the EPA is expanding, this Committee believes that construction of a modern research laboratory facility at Research Triangle Park is essential.

The Committee also endorses the purchase or lease of a Class VII supercomputer of sufficient capability to meet EPA needs for the research, development, and use of large-scale environmental models. Existing and pending legislation, including the Clean Air Act, and their respective regulations require that EPA have substantial computing capability. Among the responsibilities requiring supercomputing capability are the operation and further development of the Regional Acid Deposition Model (RADM), the Regional Oxidant Model (ROM), the Transfer Model, the Three-Dimensional Chesapeake Bay Model, the Bio Aerosol Dispersion Model, the Computer Chemistry Model for Health Effects due to pollutants, and a growing number of new proposals for the regulation of ground, water, and air pollution. It is the strong view of the Committee that any procurement process undertaken for obtaining supercomputers should be conducted in a competitive fashion.

SECTION 2(a)(2). WATER QUALITY.

Description of program.

This research program provides the research and technical support necessary to enable the Agency to carry out its regulatory and information transfer responsibilities under the Federal Water Pollution Control Act and the Water Quality Act of 1987. The program also supports regulatory responsibilities under the Marine Protection, Research, and Sanctuaries Act of 1972, and the Plastics Pollution Research and Control Act. The program's objective is to develop the scientific data needed to support a water quality-based approach to pollution control and environmentally sound ocean disposal, estuarine and Great Lakes programs. The program also evaluates innovative and alternative technologies, sludge management alternatives, and toxicity reduction methods and technologies.

Budget Request.

The fiscal year 1991 budget request for Water Quality research is $28,865,000, an increase of $2,161,600 (8.1 percent) over fiscal year 1990 levels. A total of 259 FTEs was requested, a 2.5 percent increase over the fiscal year 1990 level.

Committee Action.

The Committee increased the President's fiscal year 1991 request for Water Quality research by $4,010,000 or 13.9 percent, totaling $32,875,000, to carry out increased research on wetlands and the Great Lakes. For fiscal years 1992 and 1993, the Committee provided $36,848,000 and $40,690,000, respectively. These increases are provided to help restore budget cuts incurred by the Office of Management and Budget in its budget pass-back.

The Committee recognizes that EPA's work in support of the Great Lakes Water Quality Agreement is currently pioneering wholistic ecosystem approaches to multi-media pollution assessment which will yield innovative technologies applicable to pollution modeling nationwide. The Committee recognizes the importance of participation of local universities in this area and encourages EPA to foster expertise within the university scientific community whenever possible by contracting appropriate work in all areas of environmental modeling and contaminated sediment remediation to local universities. In addition, the Committee would like to encourage the State University of New York at Buffalo's Great Lakes Program and the State University College at Buffalo's Great Lakes Laboratory in their ongoing efforts in the area of Great Lakes multi-media pollution modeling and contaminated sediment remediation work.

The Committee recognizes the importance and benefits to many communities of continuing important wastewater treatment research. One of the major components of EPA's wastewater treatment technology program is to improve wastewater treatment in publicly-owned treatment works by, for example, developing innovative and alternative technologies and continually reviewing plant designs and efficiencies. In particular, the Committee recognizes the potential benefits of a wastewater treatment project, proposed for Cranston, Rhode Island, which involves the development of a regional interceptor system to divert various wastewater streams (including industrial, municipal, and leachate from landfills) to an existing wastewater facility with significant excess capacity. Several innovative technologies have proposed for use in this project,

including low-friction piping for gravity flow, and high-efficiency pumps. The Committee supports the concept of using federal resources to study the feasibility of and develop a plan for this proposed project.

The Committee also recognizes the importance of research which will lead to significantly reduced nutrient concentrations in treated wastewater. Treated water which contains residual nutrients, especially nitrogen-containing compounds, discharged to aquatic systems such as estuarine and marine waters can result in low dissolved oxygen, or hypoxia. The Committee believes that EPA should consider funding demonstration projects involving the use of advanced biological treatment in wastewater treatment facilities for maximizing the removal of nitrogen and other nutrients, especially in cold temperatures.

SECTION 2(a)(3). DRINKING WATER.

Description of program.

The drinking water research program provides support to States and the EPA Office of Drinking Water in implementing the Safe Drinking Water Act by setting drinking water standards; and developing methods for detecting, cleaning up, and preventing groundwater contamination. The objectives of the drinking water research program include the development of drinking water standards based on health effects through risk assessment studies, providing engineering technologies and monitoring data for drinking water standards, and providing scientific methods and data for protection of groundwater resources.

Budget Request.

The fiscal year 1991 budget request for Drinking Water research is $22,841,600, an increase of $1,071,000 (4.9 percent) over fiscal year 1990 levels. A total of 185.5 full-time employees (FTEs) was requested, 5.0 less than fiscal year 1990 FTEs.

Committee Action.

The Committee increased the President's fiscal year 1991 request for Drinking Water

research by $1,228, or 5.4 percent, totaling $24,069,000, to provide increased support for groundwater research and technical assistance programs. For fiscal years 1992 and 1993, the Committee provided $25,791,000 and $27,323,000, respectively.

SECTION 2(aX4). HAZARDOUS WASTE.

Description of program.

The Resource Conservation and Recovery Act (RCRA) and the Hazardous and Solid Waste Amendments of 1984 authorize a regulatory program to identify those wastes which pose a substantial hazard to human health or the environment, and management standards sufficient to prevent such harm. Research in this program provides the scientific and engineering basis for characterizing and determining the extent of the problems and for formulating controls. The objectives of the research program are to develop data to support the use of technologies for alternatives to disposal and the implementation of the land disposal and incineration regulations, to develop analytical procedures for identifying and measuring waste constituents, and to prevent and contain releases of hazardous wastes to the environment. The program also develops and evaluates tests and procedures for conducting risk assessments for chemicals such as dioxin, and provides quality assurance support for the hazardous waste program.

Budget Request.

The fiscal year 1991 budget request for Hazardous Waste research is $41,167,000, a decrease of $2,571,000 (5.9 percent) under fiscal year 1990 levels. This amount represents an increase of $1,401,700 for salaries and expenses, and a decrease of $3,972,500 for research and development. A total of 211.1 full-time employees (FTEs) was requested, five less than in fiscal year 1990.

Committee Action.

The Committee increased the President's fiscal year 1991 request for Hazardous Waste research by $2,235,000 or 5.4 percent, totaling $43,402,000. This amount is still slightly less than the 1990 current estimate. For fiscal years 1992 and 1993, the Committee provided $46,572,000 and $48,935,000, respectively.

As Congress proceeds with reauthorization of the Resource, Conservation, and Recovery Act, the research needs for solid and hazardous waste minimization and control will be further evaluated by the Committee. The Committee concurs with EPA that some decrease in funding for hazardous waste research is warranted, given that EPA's robust research activities in the past several years have produced much useful information necessary for decisionmaking and regulatory actions. However, several important research areas should continue to receive focused attention by EPA, including pollution prevention, innovative technology evaluation for the reduction and treatment of municipal solid waste (such as bioremediation and the use of solar energy to treat wastes), and prevention of accidental releases.

The Northwest Hazardous Waste Research, Development, and Demonstration Center was established as part of the Superfund Amendments and Reauthorization Act as an entity to be funded jointly by EPA and the Department of Energy (DOE). The Committee encourages EPA to develop a cooperative research program with DOE for research undertaken at the Center.

An important component of successful solid waste recycling and reuse activities is the use of waste exchange information networks. There are currently several non-profit waste exchange information systems within the private sector -- for example, there is a national, on-line computer waste exchange system called the "Great Lakes Waste Exchange." The Committee is concerned that ORD's plans for a government-operated waste exchange service do not adequately consider existing services, which could result in unnecessary duplication of effort, and competition by the government with the private sector. The Committee strongly encourages ORD to familiarize itself with all existing waste exchange information networks and to adapt its planned system to complement those networks rather to compete with them.

Finally, the Committee is interested in an issue which would become relevant upon passage of a federal law requiring beverage container deposits to encourage their reuse or recycling. The Committee recognizes that should such a law be implemented, the potential exists for a surplus fund to accumulate as a result of unclaimed deposits from unreturned containers. Since such a fund could be used to support environmental programs, the Committee urges ORD to undertake a study to estimate the size of such a surplus fund, assuming 5- and 10-cent deposits.

SECTION 2(a)(5). PESTICIDES.

Description of program.

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Federal Food, Drug, and Cosmetic Act (FFDCA) require the regulation of pesticide use to avoid unreasonable adverse effects to public health and the environment. FIFRA, recently amended in 1988, governs the licensing or registration of pesticide products, while relevant sections of FFDCA regulates the level of pesticide residues in raw and processed agricultural commodities. The research program improves the understanding of how pesticides interact with human activities and the environment, to assure that their use minimizes damage from pests, while maximizing the protection of food, human health, and the environment. ORD supports the Office of Pesticides Programs by performing research in the areas of test method development and validation; biomarkers, dosimetry and extrapolation; exposure monitoring; environmental engineering and technology; ecological research (including fate, transport, and risk assessment studies); biotechnology for developing pest control agents; and development of improved pollution prevention strategies for pesticides.

Budget Request.

The fiscal year 1991 budget request for Pesticides research is $15,406,100, an increase of $2,794,400 (22.2 percent) over fiscal year 1990 levels. A total of 110 full-time employees (FTEs) was requested, essentially the same level as in fiscal year 1990.

Committee Action.

The Committee increased the President's fiscal year 1991 request for pesticides research by $1,962,000 or 12.7 percent, totaling $17,369,000. The increased funding is to enhance research programs in biotechnology risk assessment, a follow-up to the Residential Pesticide Exposure Study and other total exposure assessment methodology projects relating to pesticides, and to revise guidelines relating to registration of biological pesticides. For fiscal years 1992 and 1993, the Committee provided $19,564,000 and $21,847,000, respectively.

SECTION 2(a)(6). RADIATION.

Description of program.

EPA's mandate to protect the public health and environment from adverse effects of radiation exposure is derived from several statutes: the Atomic Energy Act, the Clean Air Act, RCRA, the Uranium Mill Tailings Radiation Control Act, the Indoor Radon Abatement Act of 1988, and SARA. Other authorities are contained in the Nuclear Waste Policy Act; the Federal Water Pollution Control Act; the Marine Protection, Research, and Sanctuaries Act; the Safe Drinking Water Act; the Public Health Service Act; and the National Environmental Policy Act.

The radiation research program provides EPA's Office of Radiation Programs and other EPA, federal, regional, state, and local officials with scientifically credible data, methods, and assessments required to determine and control public exposure to radioactive materials in the environment. In particular, the program provides monitoring and quality assurance to support the Department of Energy at the Nevada Test Site and provides scientific data to support EPA's radon action plan.

Budget Request.

The fiscal year 1991 budget request for Radiation research is $4,110,700, an increase of $435,000 (11.8 percent) over fiscal year 1990 levels. A total of 22.4 full-time employees (FTEs) was requested, the same number as in fiscal year 1990.

Committee Action.

The Committee increased the President's fiscal year 1991 request for radiation research by $1,041,000 or 25.3 percent, totaling $5,152,000. For fiscal years 1992 and 1993, the Committee provided $7,358,000 and $7,653,000, respectively.

Based on recent scientific evidence indicating potentially adverse human health effects as a result of exposure to electric and magnetic radiation and associated scientific uncertainties, the Committee directs EPA to coordinate with the National Institute of Environmental Health Sciences and the Department of Energy to conduct research which will lead to improved

understanding of human exposure and resulting health effects. Section 13 of this report contains a more detailed discussion of this research.

SECTION 2(a)(7). MULTIMEDIA.

Description of program.

This program was formerly called the "interdisciplinary" program, the focus of which had been research which cut across traditional media lines. EPA has proposed a major reorganization within the Multimedia research program to better define research activities that are related to general multimedia support and the new "core" research program. As stated previously, the core research program focuses on four major research areas: (1) ecological risk, to assess ecological health and identify ecological quality trends, (2) health risk, to develop dose-response and exposure models for estimating the human health effects of pollutants, (3) risk reduction, to develop new tools and strategies for pollution prevention, and (4) exploratory research grants and academic research centers. A major component of the ecological risk research activities is the Environmental Monitoring and Assessment Program, or EMAP, to monitor the status and trends in representative ecological resource systems that are at risk from multiple environmental stresses including pollutants. As part of its risk reduction effort, EPA has launched an agency-wide pollution prevention program which addresses six major areas: (1) product research; (2) process research; (3) recycling and reuse research; (4) socioeconomic and institutional research; (5) anticipatory research; and (6) technology transfer and technical assistance.

Other multimedia research activities include: the development of uniform risk assessment guidelines, technology and information transfer, quality assurance, visiting science programs, and the procurement of state-of-the-art scientific instrumentation.

Budget Request.

The fiscal year 1991 budget request for Multimedia research is $111,389,100 an increase of $26,057,000 (30.5 percent) over fiscal year 1990 levels. A total of 180.6 FTEs was requested, a 6.5 percent increase over the fiscal year 1990 level.

Committee Action.

The Committee increased the President's fiscal year 1991 request for Multimedia research by $8,114,000, or 7.3 percent, totaling $119,503,000. For fiscal years 1992 and 1993, the Committee provided $149,893,000 and $191,390,000, respectively.

The Committee strongly endorses the program elements and goals of the multimedia research program: the "core" program, pollution prevention, and EMAP. Since its establishment in 1970, EPA's foci of acitivity have centered around program offices which are geared toward specific environmental media. Thus, EPA has too often attended to protecting one media at a time, often at the expense of overall environmental quality. For example, groundwater cleanup techniques often ignore resulting air emissions, and air scrubbing technologies often ignore the liquid and solid wastes produced. The new increased emphasis on multi-media, multi-pollutant approaches to the prevention of pollution and increased understanding of environmental effects through the EMAP program is a significant positive step for the agency and should be supported in practice, in EPA's day-to-day research and regulatory activities. Such research could also play an important role in boosting non-regulatory approaches to risk reduction, through, for example, increased education and information-sharing activities.

However, the Committee remains somewhat concerned that the Pollution Prevention Program, which was first established under the Office of Solid Waste, is too heavily focused on the reduction of solid waste relative to other pollutants such as air and water pollutants. The Committee intends to monitor closely the progress of the Pollution Prevention Program in taking a truly multi-media approach.

The Committee is also highly supportive of EPA's extramural grants program including exploratory research grants and academic research centers. It is the Committee's intent that the competitive grants will ensure long-term, stable support for basic and applied ecological research, an area that has been for the most part neglected by EPA.

SECTION 2(a)(8). TOXIC SUBSTANCES.

Description of program.

The toxic substances research program supports the Office of Toxic Substances by providing the scientific tools and supporting information needed to implement the Toxic Substances Control Act (TSCA). Particular objectives of this program include the development and evaluation of test methods for TSCA studies, conducting studies on ecotoxicity and environmental risk assessment, developing data on structure-activity relationships, and conducting health research, exposure monitoring, and ecological research on transport, fate, and field validation.

Budget Request.

The fiscal year 1991 budget request for Toxic Substances research is $28,606,200, an increase of $1,861,000 (7.0 percent) over fiscal year 1990 levels. A total of 185.5 FTEs was requested, the same number as in fiscal year 1990.

Committee Action.

The Committee increased the President's fiscal year 1991 request for Toxic Substances research by $2,358,000, or 8.2 percent, totaling $30,964,000. For fiscal years 1992 and 1993, the Committee provided $34,012,000 and $36,873,000, respectively.

The Committee endorses the establishment of an interagency indoor air quality research program, with EPA as the lead agency, to promote a coordinated and accelerated research program related to the causes, sources, effects, extent, prevention, detection, and correction of contamination indoors. The large percentage of time spent indoors, and exposure to hazards generated through the interaction among a myriad of contaminants found indoors, increases the potential for adverse effects.

A critical goal of the research effort is the characterization and assessment of actual human exposure and the identification of principal pollutant sources. While the lack of adequate availability of human exposure data represents a critical gap in efforts to minimize the threat of indoor contamination, the exposure assessment research program at EPA lacks adequate funding. Past research efforts have generated a significant body of data including the characterization of exposure to volatile organic compounds, carbon monoxide, pesticides, particulates and environmental tobacco smoke. To expand the scope of this research, efforts directed toward

improving diagnostic equipment, including the development and evaluation of portable monitors that are easy to operate and calibrate is essential. This expanded research is a prerequisite to development of the ability to routinely diagnose and control indoor air quality problems.

Of equal importance to research on the causes and effects of indoor air pollution is the development and evaluation of cost effective mitigation technologies. Additional research to improve the design and operation of buildings is also necessary if minimization of exposure to these and emerging contaminants is to be realized. Ventilation improvements, better filtration methods, and increased ability to reduce exposure and contaminant sources each play a role in mitigation.

The Committee also endorses EPA's research in the area of bioremediation of toxic chemicals on land and in contaminated groundwater. Such research should include the study of both genetically manipulated and naturally occuring microorganisms.

SECTION 2(a)(9). ENERGY AND ACID RAIN.

Description of program.

The energy research and development program provides the scientific information necessary to guide the development and use of energy resources in an environmentally acceptable manner. Research is conducted to understand the causes and effects of acid deposition and to expand the knowledge of control technologies, particularly the Limestone Injection Multistage Burner (LIMB).

Budget Request.

The fiscal year 1991 budget request for energy, including acid rain, research is $14,256,700, a decrease of $17,916,000 (percent) over fiscal year 1990 levels. A total of 30.4 full-time employees (FTEs) was requested, a 41 percent decrease from the fiscal year 1990 level. The significant decrease in funding is largely due to the completion of the National Acid Precipitation Assessment Program (NAPAP); EPA plans to maintain a much scaled-down version of its acid

rain program under NAPAP, focusing on monitoring and modeling of acid deposition.

Committee Action.

The Committee authorized fiscal year 1991 funding for energy and acid rain research at $14,256,700, the Administration's requested level. For fiscal year 1992 and 1993, the Committee provided $14,457,000 and $14,865,000, respectively. The Committee concurs with EPA that funding for acid rain research should be drastically diminished, given the termination this year of the 10-year National Acid Precipitation Assessment Program. However, the Committee supports continued monitoring of acid precipitation and emissions and their effects on ecosystems, as well as research to improve emissions reductions.

SECTION 2(b). PROGRAM MANAGEMENT AND SUPPORT.

Description of program.

The program management activities associated with the Agency's research and development program include the overall direction and centralized management of ORD. It covers the salaries and other expenses of the Assistant Administrator for Research and Development and his principal deputies, and their immediate staff groups which assist them.

Program support covers the overhead services need to support the research and development effort. Two types of support costs are included. The first consists of the share of the cost of agency-wide support services which are prorated to the research and development account. These costs include common services provided to program located in Washington, D.C., Research Triangle Park, North Carolina, and Cincinnati, Ohio, as well as certain agency-wide charge such as facilities lease costs, communications, and centralized ADP services. The second type of costs includes support services which are directly incurred in connection with the operation of ORD's laboratories. These direct costs consist mainly of laboratory and office services, utilities, building maintenance and similar housekeeping costs at research and development installations other than those located at Research Triangle Park and Cincinnati.

Budget Request.

The Agency requested $15,470,000 for management and support for fiscal year 1991, an increase of $1,027,000 (7.1 percent) over fiscal year 1990 levels. A total of 71.8 full-time employees (FTEs) was requested, no change from the fiscal year 1990 level.

Committee Action.

The Committee increased the President's fiscal year 1991 request by 1 percent ($155,000) for management and support, to $15,625,000. For fiscal years 1992 and 1993, the Committee provided $16,250,000 and $16,900,000, respectively.

SECTION 2(c). TRANSFERS.

Section 2(c) provides the Administrator with the authority to transfer funds authorized under this Act only between program categories listed in subsections 2(a) and 2(b). However, such transfers, when in excess of 10 percent of the funds authorized for particular research categores, are prohibited without first notifying and seeking approval from appropriate Committees of the House and Senate. This provision will enhance the ability of the Committee to oversee shifts in program emphasis.

SECTION 2(d). CLOSING OFFICES AND REDUCTIONS-IN-FORCE.

Section 2(d) prohibits the use of any funds authorized to be appropriated under this Act for any payment for a reduction-in-force or to close any field station, regional office, laboratory, or other research center, in any fiscal year, unless the Agency provides 30 days notice to the appropriate legislative and appropriations committees of the House and Senate of the reasons for the action and the effects of such action on the ability of the Agency to carry out the provisions of this Act. This section is not intended to apply to EPA-supported research centers under the Exploratory Research program.

The Committee took this action to ensure that adequate facilities, manpower, and resources exist in the Agency to carry out the programs authorized and provisions contained in this Act. The Committee recognizes that reorganizations of resources and shifts in personnel may be required in response to budget constraints, program priorities, and other management needs. This section will enable the Committee to exercise its oversight responsibilities with respect to such management actions more effectively, to ensure that such actions do not jeopardize the ability to the Agency to carry out its duties under this Act.

SECTION 2(e). AVAILABILITY OF APPROPRIATIONS.

Section 2(e) specifies that appropriations made pursuant to the authority provided by this Act may be obligated and expended by the Agency for such periods as may be allowed in Acts making such appropriations.

SECTION 2(f). EQUIPMENT.

To help address the widespread and serious problem of aging and inadequate laboratory equipment, noted particularly by EPA's Science Advisory Board, the Committee has provided that 10 percent of the funds allocated to multimedia research[7] should be available for replacement of laboratory equipment.

SECTION 3. CORE RESEARCH PROGRAM.

As discussed in previous sections, the Committee believes strongly in the potential benefits of the "core" research program. Therefore, in this section the program is given specific legislative authority with a a structure and goals compatible with EPA's outline of the program in its budget request and in it's 1989 draft document, "Protecting the Environment: A Research Strategy for the 1990's." Section 3 of H.R. 4873 directs the Administrator to establish a core research program to support fundamental research in

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[7]Ten percent of the amount authorized is approximately $12 million.

ecological health, and risk reduction research. Subsection (b) authorizes the Administrator to support research on environmental processes and trends, risk assessments, and data collection and assessment. Subsection (c) establishes a Research Strategy Council, composed of senior EPA officials, to develop and review the core research program and its funding. Subsection (d) directs the Science Advisory Board to review the core research program and report semiannually to Congress and the Administrator. Subsection (e) repeals the previous "long-term" research program authorized in 1978 to conform to the new provisions.

SECTION 4. ENVIRONMENTAL MONITORING AND ASSESSMENT PROGRAM.

The Committee's strong support for EMAP has been discussed previously in this report. Section 4 directs the Administrator to establish an environmental monitoring, data collection, and data analysis program to assess ecological status and trends. An initial report is required which outlines the objectives of the program, as well as an annual report to Congress, and periodic compilations of data and statistics gathered. The Administrator is required to coordinate with other federal 3. to ensure that other similar efforts are identified and integrated into the EMAP program.

SEC. 5. MODERNIZATION PROGRAM.

As discussed previously in this report, many of EPA's research facilities and equipment are badly out-of-date and inadequate for current research needs. To help ensure high-quality research, section 5 directs the Administrator to establish a modernization program to upgrade research buildings, facilities, supplies, and equipment so that they meet or exceed generally accepted scientific standards of quality. This section also directs studies of building, facility, and equipment needs; and personnel skill needs with recommendations for attracting and retaining well-qualified scientific and engineering personnel.

SEC. 6. REPEAL OF FIVE-YEAR RESEARCH REPORT REQUIREMENT

Section 6 repeals the requirement, first included in section 5 of the Environmental Research, Development, and Demonstration Act of 1976, that the Administrator file an annual

report setting out a five-year research plan. The Science Advisory Board has annually criticized the report as inadequate, describing a recent version as being "bankrupt of new ideas, innovation, and a forward look." The Committee agrees with the Science Advisory Board, the Administrator, and the Office of Management and Budget, all of which have recommended that this reporting requirement be repealed. This section also amends the Environmental Research, Development, and Demonstration Authorization Act of 1978 to conform with this repeal.

SEC. 7. SCIENCE ADVISORY BOARD.

Section 7 sets out several new requirements for the Science Advisory Board, which was established under Section 8 of the Enviromental Research, Development, and Demonstration Authorization Act of 1978. The mandate of the SAB is to provide "such scientific advice as may be requested" by the Administrator or by EPA's authorization Committees in Congress. By providing independent and authoritative advice on scientific matters, the SAB fills an important institutional role in ensuring the quality of EPA's scientific work. The provisions set out in Section 7 are intended to enhance the role of the SAB in assisting Congress in reviewing the adequacy of the resources and program management and direction for EPA's research program.

Beginning in fiscal year 1987, the SAB initiated two steps to improve its independent research review role. These steps included a commitment to evaluate at least six individual research programs per fiscal year, and reviewing the President's proposed research budget for the coming fiscal year. Section 7 codifies the practice of evaluating areas of current and planned research activities, to be selected by the SAB in consultation with certain Agency officials and Congress. This section also requires the Administrator to prepare a written response to the SAB's evaluations and recommendations and to submit to the response to the appropriate Committees in Congress within 60 days of submission of the SAB report to the Administrator. This practice is designed to ensure review by high-level officials at EPA and greater responsiveness to SABs's findings than has occurred in the past. Requiring a written response will also assist Congress in carrying out its oversight responsibilities with respect to the research programs.

SEC. 8. BIOLOGICAL DIVERSITY RESEARCH.

Biological diversity, or the variety and variability among living organisms and the

ecological complexes which form their habitats, is threatened on a global scale. Scientists predict that 25 percent of the species existing today will be extinct by the turn of the century. Conservation of ecosystems is necessary not only to preserve biodiversity but also to ensure ecological processes such as climate moderation, production and conservation of soils, nutrient cycling and natural degradation of wastes and pollutants. Protection of biodiversity is also important for maintaining for future use the plants which are the "raw materials" of agriculture and pharmaceutical products – for example, a cure for cancer may lie in an undiscovered plant species. While the importance of preserving bioligical diversity is becoming increasingly recognized, many scientific uncertainties remain concerning optimum natural resource management methods and strategies for protecting biodiversity. For example, we do not fully understand the minimum critical area of ecosystems necessary for species survival, or for species migration in changing climatic conditions.

Section 8 directs the Administrator to carry out a research and monitoring program to increase understanding of the regional, national, and global effects of environmental perturbation and pollution on biological diversity. It is the intent of the Committtee that such research will assist decisionmakers in implementing programs to protect biodiversity.

SEC. 9. NATIONAL ENVIRONMENTAL RESEARCH INSTITUTE STUDY.

In the report, "Future Risk: Research Strategies for the 1990's," the Alm Commission, chaired by former EPA Assistant Administrator Al Alm, recommended the establishment of a National Environmental Research Institute which would focus on ecological trends and assessments. The recommendation arose out of a growing concern that EPA was neglecting to undertake long-term ecological research necessary for identifying ecological trends and for predicting environmental problems before they become to serious to offset or prevent. To quote the report, "If EPA's environmental protection strategy is to be refocused on the reduction of pollution at its source in anticipation of environmental problems, then EPA's R&D program has to be expanded and reoriented to include much more basic, long-term research not necessarily tied to the immediate regulatory needs of EPA's program offices." The Subcommittee on Natural Resources, Agriculture Research, and Environment held hearings in April, 1989 and again in March, 1990 to explore the concept of an Institute. Early this year a bill was introduced, H.R. 3904, to establish a commission to study the desirability of establishing an environmental research institute.

Although the need for a solution to the problem of a lack of long-term, fundamental and applied ecological research is commonly recognized, the possible configuration of an environmental research institute to conduct such research is still being debated. Thus, the Committee is requesting in this Section that the National Academy of Sciences conduct a one-year study to develop recommendations on establishing an institute.

SEC. 10. MISCELLANEOUS AUTHORIZATIONS.

Subsection 10(a) authorizes the Administrator of EPA to lease its facilities to non-governmental entities. This new authority provides EPA with the additional flexibility it needs to engage in cooperative activities with the private sector, especially industrial organizations. Such cooperation is necessary for programs such as the Pollution Prevention Program to be practical and successful. The recognition of the need for this new authority arose from a situation which arose last year at the New Jersey Institute of Technology, one of EPA's Hazardous Substance Research Centers. It is not the intent of the Committee, however, that EPA will use this authority to acquire property solely for the purpose of leasing it for a profit.

Subsection 10(b) authorizes the Administrator to enter into cooperative agreements to conduct peer reviews of its research, development, and demonstration activities.

SEC. 11. RESEARCH ACCOMPLISHMENTS REPORT.

This section provides for a formal mechanism for informing Congress and the public of EPA's ongoing research and development programs and activities. While the relevant authorizing Committees may review these programs periodically through briefings and site visits, EPA does not currently provide any written material which provides a practical overview of ORD's projects and programs. The Committee believes that an annual report which describes the relevance of each of EPA's R&D activities with respect to environmental protection, in terms understandable to the lay population, would be a highly useful document and would help both EPA and Congress to set priorities for future research.

SEC. 12. STUDY AND DECISION AID.

Section 12 requires the Administrator to conduct a study to produce a decision-making aid

to assist state and local government authorities in planning and managing urban, suburban, and rural growth and development, while at the same time protecting the environment. The study is intended to assist communities in their planning for growth and development. The study is to identify ways in which the Federal government may be uniquely suited to help local government authorities plan for growth in such a way as to maximize environmental quality. Examples of issues to be addressed in the study include farmland conversion, air pollution, and surface and groundwater contamination. The Administrator is required to submit the report to Congress by January 31, 1992, and to notify state and local government officials that the report is available.

The requirement for such a study is contained in a bill, H.R. 2457, introduced May 23, 1989 which was referred to the Committee. The Subcommittee on Natural Resources, Agriculture Research, and Environment held a field hearing to consider the bill and issues related to it, in Lancaster Pennsylvania on March 2, 1990. Witnesses representing state and local government, land preservation groups, and the building industry testified that no network exists through which municipalities, many of which are managed by part-time supervisors, can exchange information on strategies to plan for future growth. The Director of the Lancaster Planning Commission testified that "one of the chronic problems...is the availability of information to local elected and appointed officials." Other witnesses cited examples where lack of information and decisions made on short-term, rather than long-term horizons, resulted in poor municipal planning and thus in poor environmental practices in communities all throughout the United States.

SEC. 13. HEALTH EFFECTS OF ELECTRIC AND MAGNETIC FIELDS.

The Committee is concerned that some recent scientific evidence indicates potentially adverse human health effects as a result of exposure to electric and magnetic radiation. Such nonionizing radiation emanates from devices which produce, use, or carry electricity, such as electric power lines and electrical equipment, as well as building wiring, home appliances, and office equipment. Specifically, recent research has shown that weak electric and magnetic fields (EMF) can produce reactions affecting membrane-cell interactions in ways which are compatible with early carcinogenesis. Some recent epidemiological studies have also linked EMF exposure with cancer. Other biological mechanisms observed include altered malatonin levels, increased rate of DNA formation and cell division, and altered flux of calcium in cells. However, further

research is needed to reduce scientific uncertainties regarding the health effects of exposure to EMF. The Committee bill provides $1,000,000 for research to be conducted by EPA in fiscal 1991, as well as $2,000,000 for each of the fiscal years 1992 and 1993. The Committee intends that EPA will use a significant portion of these funds to undertake environmental measurements and exposure evaluations, to investigate possible mitigation approaches, and to provide for a program of public information and technical assistance to the states. The Committee also expects ORD to interact, as appropriate, with EPA's Office of Air and Radiation, and to coordinate it's research efforts with those of the National Institute of Environmental Health Sciences, the Department of Energy, and the private sector.

SEC. 14. POLLUTION PREVENTION.

As stated previously in this report, while the Committee is pleased that EPA has apparently taken a serious interest in a cross-media approach to pollution prevention, it is concerned that the actual implementation of pollution prevention strategies has been overly focused on solid waste. The Committee also is concerned that the pollution prevention "mentality" has not become sufficiently integrated into EPA's day-to-day research, regulatory, and enforcement activities, and that budgetary support for pollution prevention is insufficient to meet research needs. According to a hearing witness, Dr. Joel Hirschhorn, "The nation has made remarkable progress in terms of getting people to listen to the case for pollution prevention and to start implementing it, but has not done well in building an infrastructure to support a permanent national commitment to pollution prevention, especially in government....Current EPA activities are under-funded and lack strategic direction to accomplish these objectives."

Section 14 authorizes the Administrator to conduct a program to research, develop, and demonstrate pollution prevention technologies, and directs the Administration to give priority to the composition of products as well as to socioeconomic and institutional barriers to pollution prevention. It is the opinion of the Committee that, while many of the technologies for preventing pollution exist or could easily be developed, many of the constraints to pollution prevention are embodied in social phenomena such as management practices, habit, and economic conditions.

It is the intent of the Committee to oversee closely the pollution prevention program at EPA to help ensure that it is truly cross-media, that is funded adequately, and that its priorities and direction are in keeping with national waste reduction needs.

APPENDIX

H.R. 4873

As ordered reported on May 23, 1990 by the
Committee on Science, Space, and Technology

To authorize appropriations for environmental research, development, and demonstration for fiscal years 1991, 1992, and 1993, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Environmental Research, Development, and Demonstration Authorization Act of 1990".

SEC. 2. GENERAL AUTHORIZATIONS.

(a) ENVIRONMENTAL RESEARCH, DEVELOPMENT, AND DEMONSTRATION.--There are authorized to be appropriated to the Administrator of the Environmental Protection Agency (hereafter in this Act referred to as the "Administrator") for environmental research, development, and demonstration activities, the following sums:

(1) $105,877,000 for fiscal year 1991, $125,995,000 for fiscal year 1992, and $148,515,000 for fiscal year 1993, for activities authorized under the Clean Air Act.

(2) $32,875,000 for fiscal year 1991, $36,848,000 for fiscal year 1992, and $40,690,000 for fiscal year 1993 for activities authorized under the Federal Water Pollution Control Act, the Marine Protection, Research, and Sanctuaries Act of 1972 and the Plastics Pollution Research and Control Act of 1987.

(3) $24,069,000 for fiscal year 1991, $25,791,000 for fiscal year 1992, and $27,323,000 for fiscal year 1993 for activities authorized under the Safe Drinking Water Act.

(4) $43,402,000 for fiscal year 1991, $46,572,000 for fiscal year 1992, and $48,935,000 for fiscal year 1993 for activities authorized under the Resource Conservation and

Recovery Act of 1976 and the Emergency Planning and Community Right-to-Know Act of 1986.

(5) $17,369,000 for fiscal year 1991, $19,564,000 for fiscal year 1992, and $21,847,000 for fiscal year 1993 for activities authorized under the Federal Insecticide, Fungicide, and Rodenticide Act.

(6) $5,152,000 for fiscal year 1991, $7,358,000 for fiscal year 1992, and $7,653,000 for fiscal year 1993 for activities related to radiation, authorized under section 301 of the Public Health Service Act, the Radon Gas and Indoor Air Quality Research Act of 1986, Title III of the Toxic Substances Control Act, and section 13 of this Act.

(7) $119,503,000 for fiscal year 1991, $149,893,000 for fiscal year 1992, and $191,390,000 for fiscal year 1993 for multimedia activities. Up to 10 percent of the funds authorized under this paragraph shall be available for replacement of laboratory equipment.

(8) $30,964,000 for fiscal year 1991, $34,012,000 for fiscal year 1992, and $36,873,000 for fiscal year 1993 for activities authorized under the Toxic Substances Control Act (except for activities related to radon research under paragraph (6) of this subsection), and the Asbestos Hazard Emergency Response Act of 1986.

(9) $14,257,000 for fiscal year 1991, $14,574,000 for fiscal year 1992, and $14,865,000 for fiscal year 1993 for energy activities and activities authorized by the Energy Security Act of 1980.

Nothing in this Act shall affect amounts authorized for fiscal years 1991 and 1992 for Superfund research activities as authorized by the Superfund Amendments and Reauthorization Act of 1986.

(b) PROGRAM MANAGEMENT AND SUPPORT.--There are authorized to be appropriated to the Administrator $15,625,000 for fiscal year 1991, $16,250,000 for fiscal year 1992, and $16,900,000 for fiscal year 1993, for program management and support of the Office of Research and Development.

(c) TRANSFERS. –

(1) 10 PERCENT LIMIT. -- Except as provided in paragraph (2), the Administrator may transfer funds among the categories listed in subsections (a) and (b) so long as the net funds transferred to or from any category do not exceed ten percent of the amount authorized for the category in such subsections.

(2) TRANSFERS EXCEEDING 10 PERCENT LIMIT. – The Administrator may propose transfers to or from any category exceeding 10 percent of the amount authorized for that category in subsection (a) or (b) if a full and complete explanation of any such

proposed transfer and the reason therefor is transmitted in writing to the Congress. The proposed transfer may be made only when 30 calendar days have passed after the transmission of such written explanation.

(3) COMPLIANCE.–If any funds are transferred from one category listed in subsection (a) or (b) to another category so listed, and the transfer of such funds or any part thereof is not in full compliance with the requirements of paragraphs (1) and (2), then (from and after the date of such transfer) none of the funds otherwise available in the category to which the transfer is made (including, but not limited to, the transferred funds themselves) may be obligated, expended, or otherwise used, for any purpose, until such time as all of such requirements have been fully complied with.

(d) CLOSING OFFICES AND REDUCTIONS-IN-FORCE.–No funds appropriated pursuant to this Act shall be used by the Administrator to close any field station, regional office, laboratory, or other research center, or for any reduction-in-force, and no such closing or reduction shall be finalized, unless at least 30 days prior to the issuing of any general notice of such closing or reduction the Administrator informs the appropriate legislative and appropriations committees of the House of Representatives and the Senate in writing of the reasons for such closing or reduction, the impact of such closing or reduction on carrying out the provisions of this Act, or any other activities for which funds are authorized under this Act, the details of such reduction or closing, and other pertinent information.

(e) AVAILABILITY. – Appropriations made pursuant to this Act shall remain available for obligation or expenditure for such periods as may be specified in the Acts making such appropriations.

SEC. 3. CORE RESEARCH PROGRAM.

(a) ESTABLISHMENT. – In addition to providing research support for the regulatory needs of the program offices, the Administrator shall establish a separately identified core research program consisting of fundamental ecological, health, and risk reduction research. Core research shall be undertaken for the purpose of generating fundamental knowledge necessary to support efforts to identify, assess, and mitigate serious environmental risks.

(b) AUTHORITY. -- In carrying out the program under this section, the Administrator may support research on environmental processes and trends, identification and assessment of potential risks to human health and the environment, and approaches to prevent and reduce such risks. The Administrator is authorized to establish and maintain resources, expertise, and facilities necessary to the advancement of the core research program established in this section.

(c) RESEARCH STRATEGY COUNCIL. –

(1) ESTABLISHMENT. – To assist the Administrator in ensuring that the core research program is part of a coherent, balanced, research program, the Administrator shall establish a Research Strategy Council.

(2) DUTIES. – The Research Strategy Council shall–

(A) oversee the process of defining the core research program as established under subsection (a), with attention to those cross-media environmental issues that are not the specific responsibility of any Environmental Protection Agency program office;

(B) review and approve the core research program on an annual basis; and

(C) ensure that adequate funding is available to conduct the core research program as established under subsection (a).

(3) COMPOSITION.– The Research Strategy Council shall consist of the following officials of the Environmental Protection Agency:

(A) The Administrator.

(B) The Deputy Administrator.

(C) The Assistant Administrator for Research and Development.

(D) The Deputy Assistant Administrator for Research and Development.

(E) The Deputy Assistant Administrators of each program office.

(F) Such other appropriate officials as the Administrator may designate.

(d) SCIENCE ADVISORY BOARD. – The Science Advisory Board established under the Environmental Research, Development, and Demonstration Authorization Act of 1978 (hereafter in this Act referred to as the "Science Advisory Board"), or a designated subcommittee thereof, shall review the core research program activities and make recommendations on the core research program, including recommendations on the appropriate balance between core and programmatic research. A report containing the results of such review and recommendations shall be submitted to the Administrator and the Congress every two years beginning in March, 1991.

(e) CONFORMING AMENDMENT. – Section 7 of the Environmental Research, Development, and Demonstration Authorization Act of 1981 is amended by striking subsection (f).

SEC. 4. ENVIRONMENTAL MONITORING AND ASSESSMENT PROGRAM.

(a) ESTABLISHMENT.– The Administrator shall establish an Environmental Monitoring

and Assessment Program to conduct comprehensive, long term environmental monitoring, data collection, and data analysis as a means of assessing and responding to the current and long term status and trends of the ecological resources of the United States.

(b) INITIAL REPORT – The Administrator shall submit to Congress not later than 180 days after the date of enactment of this Act a report outlining the objectives of the Environmental Monitoring and Assessment Program and a strategy for achieving those objectives.

(c) COORDINATION. – The Administrator shall coordinate the Environmental Monitoring and Assessment Program activities with the heads of other Federal agencies in order to identify, integrate, and fully utilize results of related efforts undertaken by other agencies and minimize duplication of efforts.

(d) ANNUAL REPORT. – The Administrator shall submit an annual report to Congress identifying and assessing the performance of the activities undertaken under the Environmental Monitoring and Assessment Program, the effectiveness of interagency coordination, and the contributions of multi-agency research to the advancement of the research objectives under subsection (b).

(e) PUBLIC DATA. – The Administrator shall periodically submit to Congress and make publicly available a compilation of any statistical data summaries and interpretive reports on ecological status and trends developed as a result of the Environmental Monitoring and Assessment Program.

SEC. 5. MODERNIZATION PROGRAM.

(a) MODERNIZATION PROGRAM.–The Administrator shall establish a modernization program designed to identify, acquire, and maintain buildings, facilities, supplies, equipment, and instrumentation needed to conduct high quality research. In carrying out this section, the Administrator shall ensure that such buildings, facilities, supplies, and equipment meet or exceed the standards generally accepted by the scientific community as appropriate for conducting high-quality research, including research instrumentation replacement standards.

(b) STUDIES.–

The Administrator shall conduct studies–

(1) to evaluate and determine the adequacy of current buildings, facilities, supplies, and equipment and identify future building, facility, supplies, equipment, and research instrumentation needs; and

(2) to identify and assess future research personnel needs and make recommendations

for attracting and retaining well-qualified scientists, engineers, and other personnel to meet such needs.

The studies required by this subsection shall be submitted to Congress within one year after the date of enactment of this Act.

SEC. 6. REPEAL OF 5 YEAR RESEARCH REPORT REQUIREMENT.

(a) REPEAL.– Section 5 of the Environmental Research, Development, and Demonstration Authorization Act of 1976 (42 U.S.C. 4361) is repealed.

(b) AMENDMENTS TO THE ENVIRONMENTAL RESEARCH, DEVELOPMENT, AND DEMONSTRATION AUTHORIZATION ACT OF 1978.–The Environmental Research, Development, and Demonstration Authorization Act of 1978 is amended as follows:

(1) Strike section 4 (42 U.S.C. 4361a).

(2) Strike ", including those defined in the five-year research plan" at the end of section 7(a) (42 U.S.C. 4364(a)).

(3) Strike section 8(c) (42 U.S.C. 4365(c)).

(4) Strike "The Administrator shall include" and all that follows through the end of the subsection in section 9(a) (42 U.S.C. 4366(a)).

SEC. 7. SCIENCE ADVISORY BOARD.

(a) ANNUAL REPORT. – The Science Advisory Board shall submit an annual report to Congress and to the Administrator, providing the Science Advisory Board's views on the proposed research program as described in the President's budget request for research, development, and demonstration activities at the Environmental Protection Agency. Such report shall be submitted to Congress as soon as practicable after the submission of the President's budget to Congress.

(b) EVALUATION. – The Science Advisory Board shall conduct periodic evaluations of selected areas of the current and planned research, development, and demonstration activities of the Environmental Protection Agency. The areas for evaluation shall be selected by the Science Advisory Board in consultation with the Administrator, the Office of Research and Development, other Agency programs, the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Environment and Public Works of the Senate. Reports containing the Science Advisory Board's evaluations and recommendations shall be submitted with such committees and the Administrator. The Administrator shall provide to such committees a written response to the Science Advisory Board's evaluations and

recommendations within 60 days after the Science Advisory Board's report has been submitted.

(c) CONCURRENT SUBMISSION TO CONGRESS. – Any report required by law to be submitted by the Science Advisory Board to the Administrator shall be concurrently submitted to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Environment and Public Works of the Senate.

SEC. 8. BIOLOGICAL DIVERSITY RESEARCH.

The Administrator shall carry out a program of research and monitoring on regional, national, and global impacts of environmental pollution and perturbation on biological diversity. Such research may include assessments of relevant species, populations, or communities; assessments of biological diversity trends; methods to identify and assess the effects on biological diversity of environmental pollution and perturbation; and assessments of the efficacy of conservation strategies to mitigate such effects.

SEC. 9. NATIONAL ENVIRONMENTAL RESEARCH INSTITUTE STUDY.

The Administrator shall contract with the National Academy of Sciences to conduct a study to develop recommendations on establishing a National Environmental Research Institute which would support long-range fundamental and applied environmental research, including competitive grants to interdisciplinary research teams and individual investigators. Within 18 months after the date of enactment of this Act, the Academy shall report to the Administrator and to Congress on its recommendations regarding the mechanisms that can be used to advance environmental research, including the possibility of a National Environmental Research Institute, the relationship of Federal agencies and other research entities conducting environmental research, and the appropriate levels and sources of environmental research funding.

SEC. 10. MISCELLANEOUS AUTHORIZATIONS.

(a) AUTHORITY TO LEASE PROPERTY. – To promote the research, development, and demonstration activities for which funds are authorized by this Act, or any other activities for which funds are authorized under this Act, the Administrator is authorized to lease to other persons facilities, buildings, and other real and personal property under such terms and conditions which he determines to be in the public interest. The term of any such lease shall not exceed ten years. Such lease may be with or without consideration and any compensation received may be used by the Environmental Protection Agency to defray costs of providing the

property and supporting services.

(b) AUTHORITY FOR PEER REVIEW. – In order to assist in reviewing research, development and demonstration grant, contract, and cooperative agreement applications, the Administrator shall enter into cooperative agreements to conduct appropriate scientific and professional reviews of such applications and may use research funds authorized by this Act for such cooperative agreements to conduct application reviews.

SEC. 11. RESEARCH ACCOMPLISHMENTS REPORT.

The Administrator shall submit an annual report to Congress setting out, in lay terms to the extent possible, the accomplishments of the research, development, and demonstration programs for which funds are authorized by this Act and the relevance and significance of such accomplishments to the Environmental Protection Agency's mission to reduce or prevent environmental risk.

SEC. 12. STUDY AND DECISION AID.

(a) STUDY. – The Administrator shall conduct a study of the environmental implications and potential consequences of growth and development of urban, suburban, and rural communities. The study shall include an evaluation of the issues of farmland conversion, air pollution, surface and ground water contamination, and the need for, and impact of, expanded support infrastructure. Based upon the findings of the study, the Administrator shall produce a decision aid to assist State and local authorities in planning and managing urban, suburban, and rural growth and development while preserving environmental quality.

(b) CONSULTATION. – The Environmental Protection Agency shall consult with other appropriate Federal departments and agencies as necessary in carrying out this section.

(c) REPORT. – The Administrator shall submit to the Congress a report containing the decision aid produced under subsection (a) no later than January 30, 1992. The Administrator shall notify appropriate State and local authorities that such decision aid is available on request.

SEC. 13. HEALTH EFFECTS OF ELECTRIC AND MAGNETIC FIELDS.

(a) ESTABLISHMENT OF RESEARCH PROGRAM.– Under the radiation research activities authorized under section 2(a)(6), the Administrator shall develop and implement a plan for a research program to increase understanding of the health effects of exposure to electric and magnetic fields. Such plan shall include means for coordination with related

research programs at the National Institute for Environmental Health Sciences, the Department of Energy, and other Federal agencies and departments, as appropriate, and for cooperative research with the private sector. Such plan shall be submitted to Congress within one year after the date of enactment of this Act. The research program implemented under the plan shall include the development and use of methods for measuring human exposure to electric and magnetic fields from multiple sources, and investigations to identify and characterize health effects which may occur as a result of exposure to electric and magnetic fields. In conjunction with such program, a public information dissemination and technical assistance program related to the human health effects of exposure to electric and magnetic fields shall be established.

(b) FUNDING LEVELS.– From the sums authorized to be appropriated under section 2(a)(6), the following sums shall be available for planning and implementation of the research program authorized under this section:

(1) $1,000,000 for fiscal year 1991.

(2) $2,000,000 for fiscal year 1992.

(3) $2,000,000 for fiscal year 1993.

SEC. 14. POLLUTION PREVENTION.

The Administrator shall conduct an intramural and extramural program of research, development, and demonstration projects of new or improved multimedia pollution prevention technologies, giving priority to research, development, and demonstrations relating to product constituents and socioeconomic and institutional barriers. There are authorized to be appropriated for carrying out this section $10,000,000 for fiscal year 1991, $20,000,000 for fiscal year 1992, and $30,000,000 for fiscal year 1993, to be derived from amounts authorized under section 2(a).

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